N-Channel 100V (D-S) MOSFET

GENERAL DESCRIPTION

The MEE3710-G is a N-Channel enhancement mode power field effect transistor, using Force-MOS patented Extended Trench Gate (ETG) technology. This advanced technology is especially tailored to minimize on state resistance and gate charge, and enhance avalanche capability. These devices are particularly suited for medium voltage application such as charger, adapter, notebook computer power management and other lighting dimming powered circuits, and low in-line power loss that are needed in a very small outline surface mount package.

FEATURES

● $R_{DS(ON)} \leq 23m\Omega @V_{GS}=10V$
● Super high density cell design for extremely low $R_{DS(ON)}$
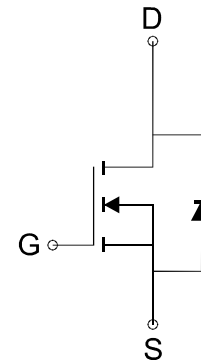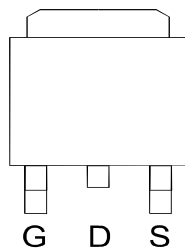● Exceptional on-resistance and maximum DC current capability

APPLICATIONS

● Power Management
● Synchronous Rectification
● Load Switch

PIN CONFIGURATION

(TO-252-3L)

Top View

G   D   S

Ordering Information: MEE3710-G (Green product-Halogen free)

N-Channel MOSFET

Absolute Maximum Ratings (T$_A$=25℃ Unless Otherwise Noted)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V$_{DS}$	100	V
Gate-Source Voltage		V$_{GS}$	±20	V
Continuous Drain Current*	T$_C$=25℃	I$_D$	37	A
	T$_C$=70℃		30	
Single pulse Avalanche Energy L=0.5mH		I$_{AS}$	16	A
Single pulse Avalanche Energy L=0.5mH		E$_{AS}$	64	mJ
Pulsed Drain Current		I$_{DM}$	151	A
Maximum Power Dissipation*	T$_C$=25℃	P$_D$	69	W
	T$_C$=70℃		44	
Junction and Storage Temperature Range		TJ, TSTG	-55 to 150	℃
Thermal Resistance-Junction to Case*		R$_{θJC}$	1.8	℃/W

*The device mounted on 1in^2 FR4 board with 2 oz copper
*100% UIS Tested base on TESEC machine

Matsuki Electric

Force mos

N-Channel 100V (D-S) MOSFET

Electrical Characteristics (TJ =25℃ Unless Otherwise Specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
STATIC						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	100			V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	2		4	V
IGSS	Gate Leakage Current	VDS=0V, VGS=±20V			±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=100V, VGS=0V			1	μA
RDS(ON)	Drain-Source On-State Resistance[a]	VGS=10V, ID=28A		19	23	mΩ
VSD	Diode Forward Voltage	Is=28A, VGS=0V,			1.2	V
DYNAMIC						
Qg	Total Gate Charge	VDS=80V,VGS=10V,ID=28A		25		nC
Qgs	Gate-Source Charge			10		
Qgd	Gate-Drain Charge			6		
Ciss	Input Capacitance	VDS=25V,VGS=0V, f=1.0MHz		1728		pF
Coss	Output Capacitance			530		
Crss	Reverse Transfer Capacitance			32		
td(on)	Turn-On Delay Time	VDS=50V, RL =1.8Ω VGS=10V,RG=2.5Ω ID=28A		22		ns
tr	Turn-On Rise Time			60		
td(off)	Turn-Off Delay Time			25		
tf	Turn-Off Fall Time			16		
Trr	Reverse Recovery Time	IF=28A,VGS=0V,di/dt=100A/us		40		ns
Qrr	Reverse Recovery Charge			60		nC

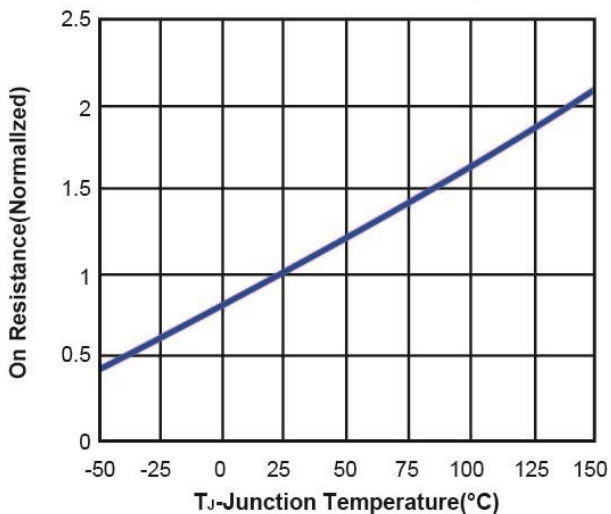Notes: a. Pulse test; pulse width $\leqq$ 300us, duty cycle$\leqq$ 2%

     b. Matsuki Electric/ Force mos reserves the right to improve product design, functions and reliability without notice.
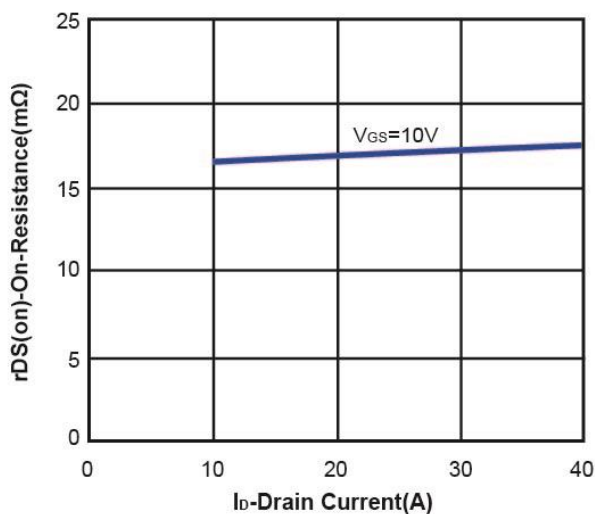
N-Channel 100V (D-S) MOSFET

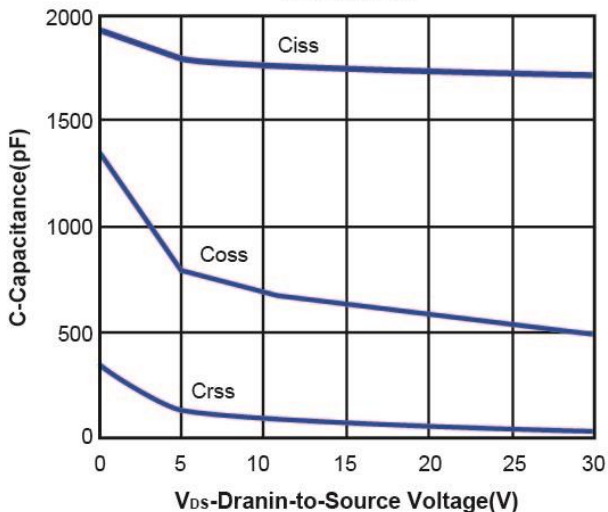**Typical Characteristics (T$_J$ =25℃ Noted)**

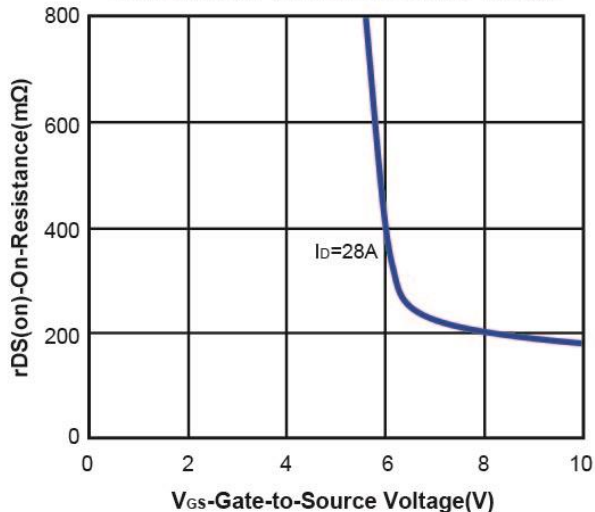On Resistance vs. Junction Temperature

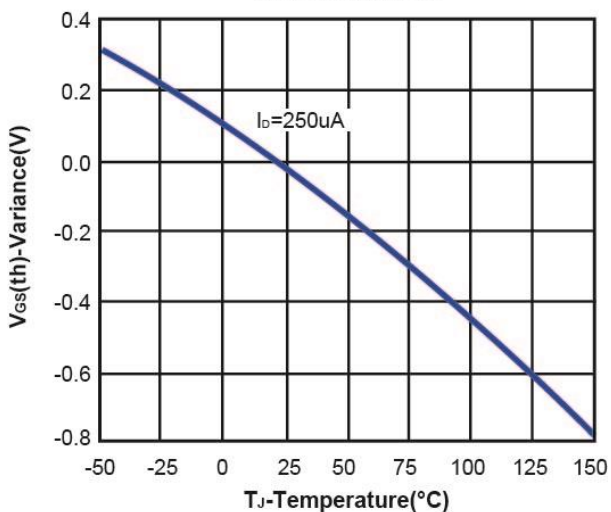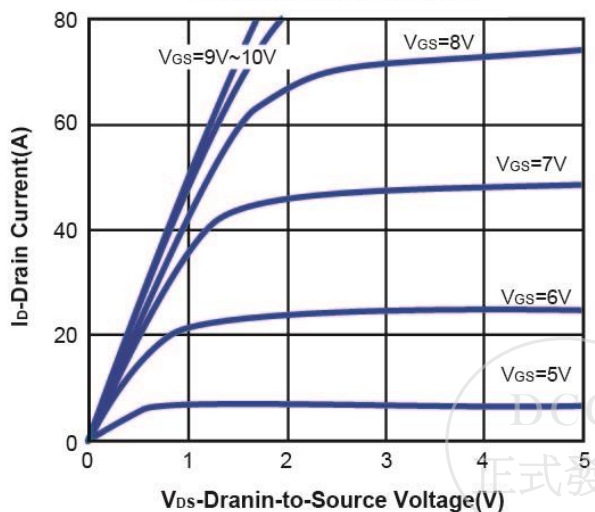On Resistance vs. Drain Current
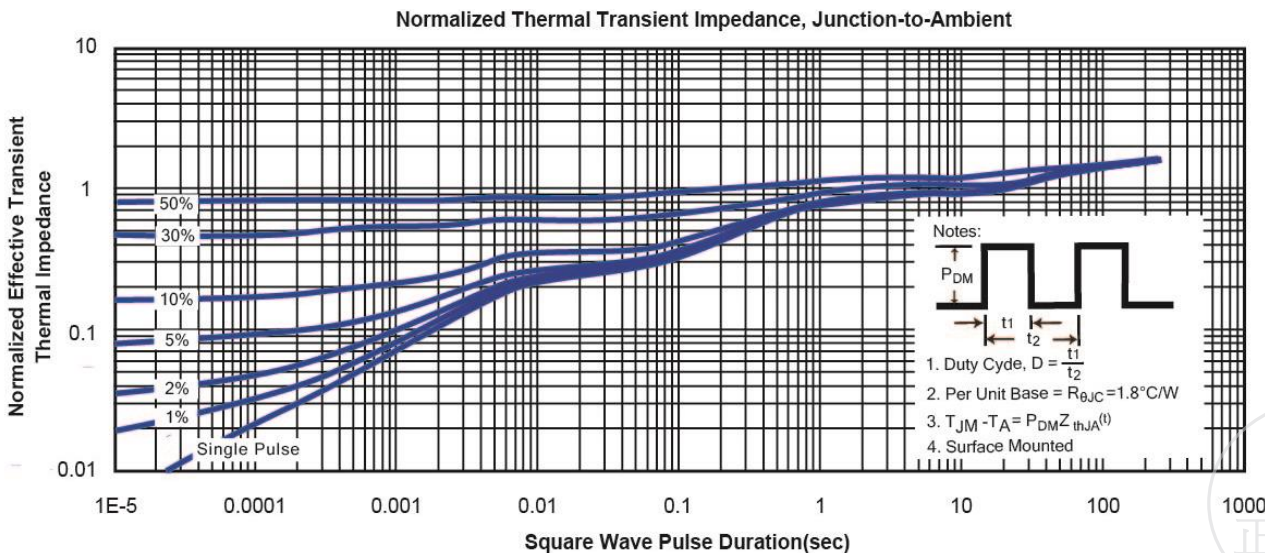

Capacitance

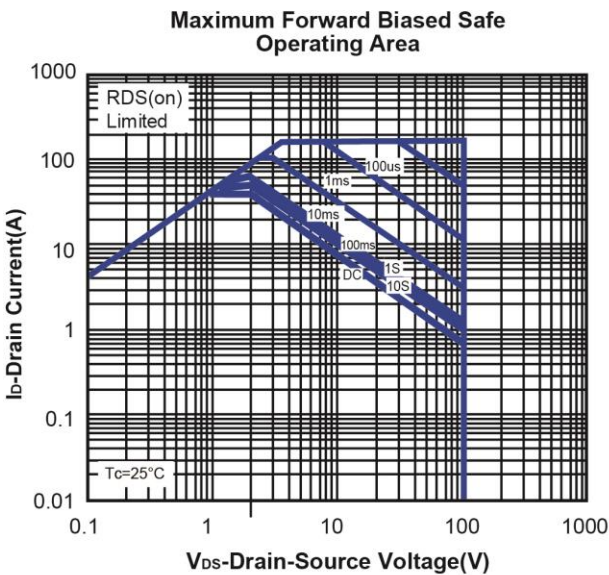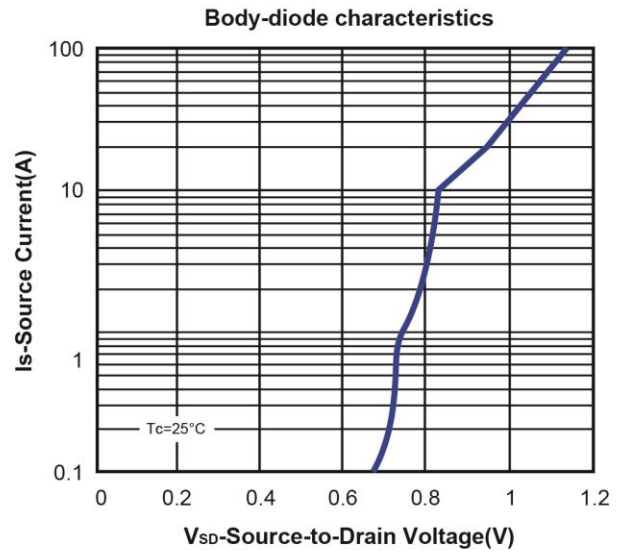On Resistance vs. Gate-to-Source Voltage

Threshold Voltage

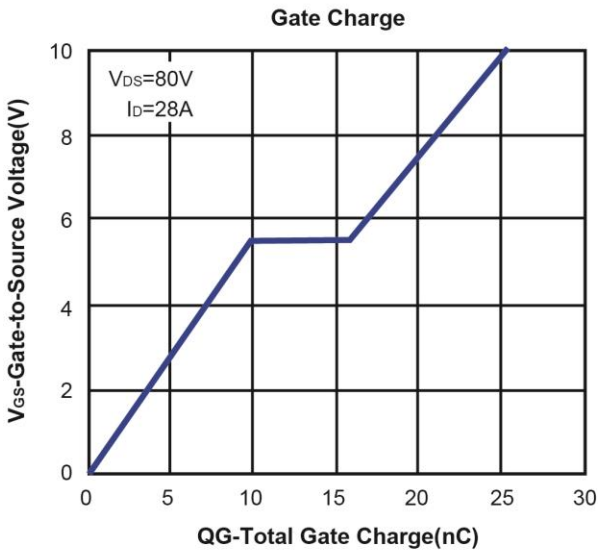On-Region Characteristics

N-Channel 100V (D-S) MOSFET

Typical Characteristics (TJ =25℃ Noted)

Gate Charge

$V_{DS}=80V$
$I_D=28A$

Body-diode characteristics

$Tc=25°C$

Maximum Forward Biased Safe Operating Area

RDS(on) Limited

100us
1ms
10ms
100ms
DC
1S
10S

$Tc=25°C$

Normalized Thermal Transient Impedance, Junction-to-Ambient

50%
30%
10%
5%
2%
1%
Single Pulse

Notes:
P_{DM}
t1
t2
1. Duty Cyde, $D = \frac{t1}{t2}$
2. Per Unit Base = $R_{\theta JC}=1.8°C/W$
3. $T_{JM} - T_A = P_{DM} Z_{thJA}^{(t)}$
4. Surface Mounted

TO-252-3L Package Outline
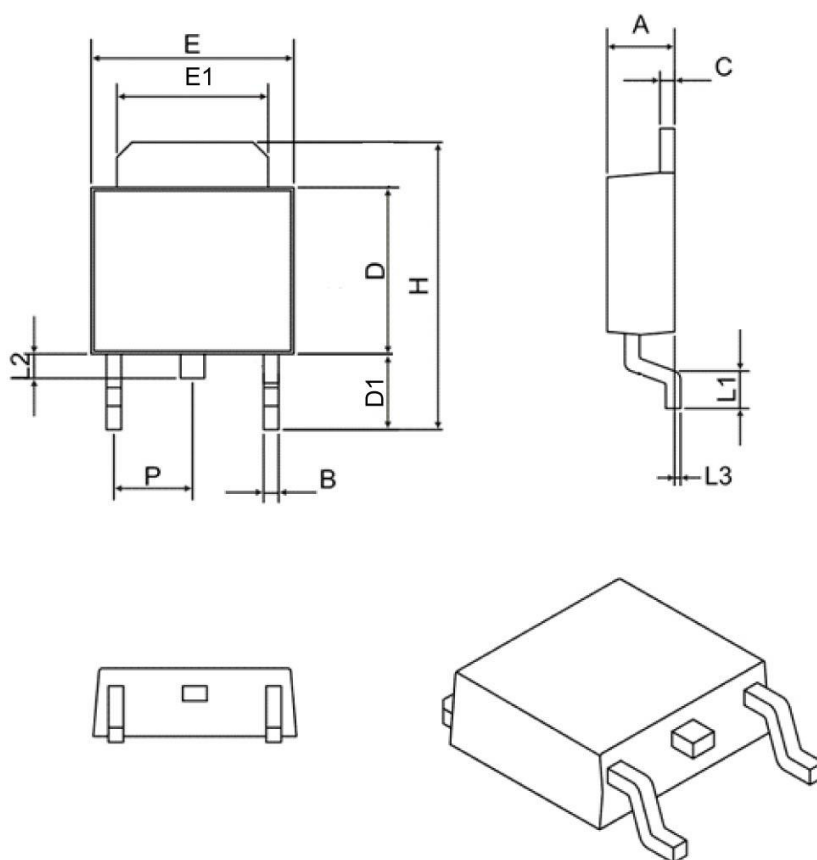
SYMBOL	MIN	MAX
A	2.10	2.50
B	0.40	0.90
C	0.40	0.90
D	5.30	6.30
D1	2.20	2.90
E	6.30	6.75
E1	4.80	5.50
L1	0.90	1.80
L2	0.50	1.10
L3	0.00	0.20
H	8.90	10.40
P	2.30 BSC	

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